(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 14 July 2005 (14.07.2005)

PCT

(10) International Publication Number WO 2005/064535 A1

(51) International Patent Classification7:

G06T 1/00

(21) International Application Number:

PCT/IB2004/052682

- (22) International Filing Date: 7 December 2004 (07.12.2004)
- (25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 03104924.0

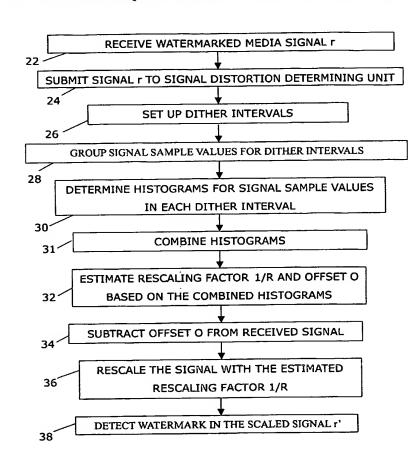
22 December 2003 (22.12.2003)

- (71) Applicant (for all designated States except US): KONIN-KLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): KALKER, Antonius, A., C., M. [NL/US]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

- (74) Agents: SCHMITZ, Herman, J., R. et al.; Prof. Holst-laan 6, NL-5656 AA Eindhoven (NL).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,

[Continued on next page]

(54) Title: ESTIMATION OF QUANTISATION STEP SIZES FOR A WATERMARK DETECTOR



(57) Abstract: The present invention relates to a method, apparatus and computer program enabling at least product identification the presence data symbols that have been embedded in a media signal. A transmitted media signal is obtained (step 22), which comprises a possibly distorted version of a host signal in which data symbols have been embedded by quantisation using a certain quantisation step size and to which dither with a set of dither values has been added. Several dither value intervals within the set are provided, where each interval corresponds to one dither value (step 26). A histogram is determined for each interval (step 30), where a histogram is determined for all sample values of a set of signal samples of the transmitted media signal and having a dither value in the corresponding interval. The separate histograms combined and a rescaling factor is determined based on the combined histogram (step 32) in order to estimate the quantisation step size.

WO 2005/064535 A1



SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

with international search report